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AUSTRALIA
1925



THE SEAL
OF
QUALITY.

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of Agriculture.
**A Brief Catechism
LUCERNE**

Lucerne may well be termed "The King of Fodder Plants," as it is a wealth bringer to the producer, and it behoves every farmer to put down at least a portion of his property in this wonderful fodder.

Lucerne is valuable as fodder for horses, dairy cattle, bullocks, sheep and pigs. It can be cut and fed green, judicious grazing does not affect the plants, it makes first-class silage, and the quality of its hay is too well known to need any further recommendation.



Cutting a good stand of Brunning's Lucerne.

GROW LUCERNE ON EVERY FARM, Because—

1. It is a profitable crop.
2. It increases farm values.
3. It excels almost every farm crop,
 - (a) In yield per acre.
 - (b) In feeding value.
 - (c) As a soil enricher.
 - (d) In its drought resistant powers.
4. The frequent cutting destroys weeds.
5. It balances the corn and other rations.
6. It leads to live-stock farming.
7. It makes first-class hay.
8. It can either be pastured or cut for green feed.
9. It makes excellent quality silage.

F. H. BRUNNING PTY, LTD.

64 ELIZABETH STREET, MELBOURNE

1. Q. WHAT IS LUCERNE?

A. It is a member of the Medicago family (M. Sativa) a perennial pasture plant and a most valuable fodder. Experience has more than fully demonstrated its value as a wealth-bringer to the agriculturist, and Lucerne is really now too well known to require any fuller description.

2. Q. IS THERE MORE THAN ONE VARIETY?

A. Yes, there are several varieties or, more correctly speaking, types of Lucerne. As far as Australian conditions are concerned, the Hunter River (N.S.W.) grown seed of the French Provence Type has been proved to give the most satisfactory results. In some districts, the New Zealand Marlborough grown seed has proved very satisfactory, while at Werribee many farmers prefer the French grown Provence seed. These three Lucernes are really all of the one type, varying only in the country in which the seed is grown. Other types are the Grimm, Cossack, Baltic, Siberian and Hansen cold weather Lucernes which, however valuable they may be for the extreme conditions under which they are grown in America and Europe, cannot be recommended for Australian conditions. Experiments have proved that these cold weather types yield fodder of poorer quality and in much lesser quantity than the Hunter River, New Zealand, and French Provence varieties.

In addition to the above, there are numerous various dry weather types in U.S.A., the Peruvian or Hairy Lucerne, Turkestan, and Arabian varieties. The special features these types possess are hardly likely to justify their use in Australia in preference to the Hunter River, New Zealand, Marlborough grown and French Provence Lucernes.

3. Q. WHAT IS IT GOOD FOR?

A. Lucerne is valuable as fodder for horses, dairy cattle, sheep and pigs. It can be cut and fed green, and judicious grazing will not affect the stand. It makes first-class silage, and the quality of its hay is too well-known to need any recommendation. Lucerne also makes splendid green feed for poultry.

4. Q. WHERE WILL IT GROW?

A. It has now been definitely proved that Lucerne can be successfully grown in most parts of Australia. While the types which have proved so successful are not constitutionally suited to the very coldest parts of the Commonwealth, it has been successfully grown in Northern and Midland Tasmania, in various parts of Gippsland, as well as in the Western District and other cooler parts of Victoria, in many parts of New South Wales, principally in the Hunter River, Tamworth, Moree, Griffith, Cowra and Denman districts, in S.A., in Queensland and in W.A. Exceptionally good results are obtained when grown under irrigation and the Lucerne paddocks in the North, North Western and Goulburn Valley districts in Victoria, as well as at Werribee, near Melbourne, are testimonials of the wonderful climatic adaptability of this Permanent Pasture.

5. Q. WHAT ARE THE ESSENTIALS NECESSARY TO GROW LUCERNE SUCCESSFULLY?

A. Briefly, these essentials may be summed up as follows: Thorough Sub-soiling, Proper Soil Preparation, the Use of Lime, Good Grading, Abundant Manuring, Well-drained Ground, Frequent Cultivation, Effective Watering (where grown under irrigation), Top-dressing every two or three years, and last, but not least, the Use of Brunning's Clean Reliable Seed.

6. Q. WHY IS THOROUGH SUB-SOILING SO IMPERATIVE?

A. Although proper soil preparation is imperative as a fine, mellow seed bed is necessary to get a good stand, it is owing to its deep-rooting habit and power of sending its roots down into the lower strata of ground that Lucerne is enabled to withstand drought. Proper Soil Preparation alone is not sufficient, because lack of sub-soiling or failing to break up the lower strata of ground prevents the roots from penetrating right down, and forces them to run along the surface of the ground, thus impoverishing the plant, rendering it liable to be burnt out in hot, dry weather, while depriving it of the plant foods which are contained in the sub-soil.

7. Q. DOES IT REQUIRE LIME?

A. Lime, being one of the necessary plant food constituents, it must necessarily be in any land from which it is expected to produce a good crop of Lucerne.

Lime also tends to liberate from its insoluble form of combinations, another essential plant food substance in Potash and at the same time converts it into a condition in which it is readily available to the plant as food; it is also essential to the development of the micro-organisms which bring about the formation of nitrates in soils, and in addition it is necessary to neutralise the acids that are naturally formed in the process of decay of the organic matter present in soils.

8. Q. WHAT IS GRADING FOR?

A. Good grading is essential to ensure even and uniform watering of the crop when Lucerne is grown under irrigation.

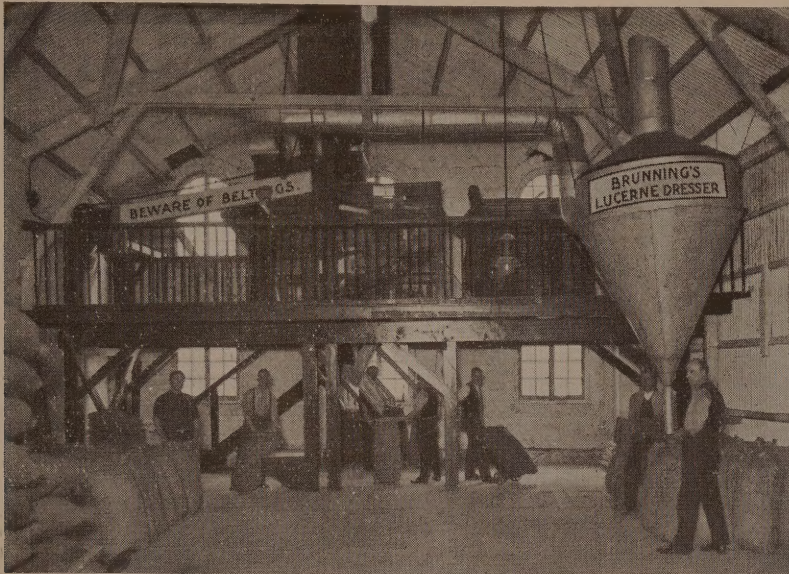
9. Q. DOES LUCERNE REQUIRE MANURING?

A. Adequate Manuring, either in the shape of Fertilisers applied immediately before or after the time of sowing, or in the shape of green manure by ploughing in some previous crop adapted for the purpose, such as Crimson Clover, Berseem Clover, Bokhara Clover, Hubam or some similar leguminous soiling plant, is a necessity in almost every case in Agriculture, and is none the less essential in Lucerne. Green Manuring, in the first place, can be thoroughly recommended, while a top-dressing with Superphosphate or Basic Slag, at the rate of 84 to 112 lbs. per acre every year, is a sound and remunerative proposition.

Falling Green Manure in the first place, the best results will be obtained by using from 84 lbs. to 112 lbs. of Superphosphate per acre. Australian soils being more deficient in Phosphorous than in the other two essential elements, Nitrogen and Potash.

10. Q. WHY IS THOROUGH DRAINAGE NECESSARY?

A. Thorough and adequate drainage is absolutely necessary to the success of Lucerne, and if the soil is not naturally drained to a depth of at least several feet, this deficiency must be attended to, before Lucerne growing is attempted. Where badly drained patches occur in a field, it will be noticed that the Lucerne soon dies out, and is replaced by weeds. The plants are not affected by flood water, unless submerged for some time, but water must never be allowed to lie on Lucerne for any length of time, and to cover a field for 2 or 3 days will surely mean killing it out.



Brunning's Special Lucerne Dressing Machine. The finest of its kind in Australia.

11. Q. WHAT IS THE BEST METHOD OF SOIL PREPARATION?

A. Lucerne is a deep rooting plant, and though its roots have great penetrating power, the plants will thrive better and the roots be enabled to get down to a lower strata of earth by the deep stirring of a stiff sub-soil. A good seed bed is necessary because Lucerne is a small seed, and unless a properly prepared seed bed is made, a large quantity is liable to be buried, resulting in a patchy stand. To prepare the ground, plough as deeply as possible without bringing clay to the surface, and follow in the furrow with a sub-soiling plough, set from 12 to 14 inches deep. This depth of loose soil will enable the young plants to root well, and where irrigation is practised, will enable the applied water to soak down. Bacterial action, so essential to the healthy growth of Lucerne, takes place chiefly within from 12 to 24 inches below the surface, hence the necessity for having this layer of the soil in good physical condition.

Just before the seed is sown, plough the land again, then harrow and roll. A firm, fine seed bed is necessary, and to bring the soil to the necessary fine tilth, it may be necessary to roll twice. When broad-casting the seed, run a pair of harrows lightly over the compacted soil just prior to seeding. If weeds or grass are still present, they should be worked out with a spring-tooth cultivator, and removed. The ground will then be ready for sowing the seed.

12. Q. THE NECESSITY FOR GOOD SEED?

A. Good seed with Lucerne means the best strain for the particular climatic conditions, seed absolutely free from dodder and other noxious weeds, and of good germination. The strain which is so well and favorably known throughout Australia is the French Provence type acclimatised in the Hunter River, Tamworth and other Lucerne growing districts in New South Wales, and is the giant broad-leaved, upright growing type generally known as the Hunter River which yields a greater bulk of fodder than any of the other varieties. As this particular French Provence type can be grown throughout Australia, and is superior to the other strains, these need not be further discussed here.

In addition, therefore, to using the true, broad-leaved, upright strain of the above type, the seed must be of good germination, and furthermore CLEAN, that is to say, absolutely free from dodder and other noxious weeds. The farmer knows the damage and injury done by dodder, but there are many other weeds to be found in uncleared Lucerne Seed, which are almost as dangerous. Farmer's Dressed Seed means seed as received direct from the farm, without being screened or machine-dressed. Machine-dressed seed means seed that has been cleaned once by machinery over a fine sieve.

13. Q. WHY BRUNNING'S LUCERNE IS THE BEST.

A. Because all of Brunning's seed is saved from dodder-free paddocks, from vigorous healthy plants, and every precaution is taken to ensure the

elimination of other noxious weeds. Brunning's STANDARD Quality Hunter River Lucerne means seed that has been triple-machine dressed by the latest and most up-to-date machinery, and brought as near perfection as possible. It represents the acme of perfection in Lucerne seed, and the highest grade obtainable, having under test a germination of over 98%, and a purity of practically 100%. For the protection of purchasers, Brunning's "STANDARD" Quality Lucerne is only supplied in sealed calico bags, each containing 28 lbs. nett weight of seed, except where an odd quantity is required, when it is packed accordingly, but Brunning's "STANDARD" Quality Lucerne is never sent out unless under seal. Where a full sack of this Lucerne is ordered, six calico bags are packed in each double sack, making a total nett weight of 168 lbs. of seed per sack. Owing to the high purity and excellent germination, a lesser quantity of Brunning's "STANDARD" quality Lucerne is necessary to sow an acre thoroughly than seed of lower quality.

14. Q. WHEN SHOULD SEED BE SOWN?

A. Lucerne seed may be sown both in the Spring and the Autumn, according to the rainfall, the climatic conditions and whether irrigation is available or not. Where irrigation is not available, Autumn sowing is the best for hot, dry districts, having a light Summer rainfall and a mild Winter; where facilities for artificial water are available under such climatic conditions, seeding may be carried out either in the Autumn or Spring, although the latter is, if anything, preferable, as with the advent of warm weather, the young Lucerne plants grow rapidly, and soon out-distance any weeds that may have survived the preparatory cultivation of the ground.

For districts such as Gippsland, with a colder Winter and a more regular Summer rainfall, Spring sowing will generally give the best results, but it does not necessarily follow that this rule is invariable, and splendid stands have been secured both there and in the Western District of Victoria, from early Autumn seedings.

Sowing, however, must be carried out early, so as to allow the young plants to become thoroughly established before being called on to withstand cold weather, and where circumstances necessitate late Autumn seeding in such districts, it is advisable to make a light dressing of Algerian Oats as a nurse crop, although practical experience has demonstrated that, except under a few special conditions, it is better to sow Lucerne without a nurse crop.

On the other hand, although Spring seeding is preferable in the Northern areas of Victoria where irrigation is available, seed sown in the Autumn enables the plants to become thoroughly established during the Winter and early Spring, before being called on to withstand the dry Summer weather, and to a great degree economises in the number of irrigations necessary. Another advantage is that an Autumn sown crop in these districts can be utilized to a considerable extent during the first Summer, while Lucerne sown the previous Spring must be treated lightly until more thoroughly established.

15. Q. WHAT QUANTITY OF SEED SHOULD YOU SOW PER ACRE?

A. The amount of Lucerne seed required to sow an acre varies according to the quality, soil, and weather conditions. An average seeding of Farmer's Dressed Seed is about 25 lbs. broadcast, and 15 lbs. per acre drilled, while of Brunning's Supergrade M/Dressed and Tested Quality from 16 to 20 lbs. broadcast and 10 lbs. per acre in drills would be required for the same area. It is there that the value of Brunning's "STANDARD" Quality Hunter River Lucerne can be appreciated because, sown in drills as small a quantity as 6 lbs. will be sufficient for an acre, thereby effecting a saving in the amount of seed used which means a lesser cost for seed per acre, as well as ensuring freedom from dodder and other noxious weeds. It is, however, a mistake to risk a good stand by stinting the seed, and unless the Lucerne grower has had sufficient experience in sowing to utilize the seed to the fullest extent, it is advisable to sow 6 lbs., but not more than 8 lbs., per acre of this high-grade Lucerne.

It will thus be easily understood that the quality of seed not only makes a very considerable difference to the quantity required per acre, but that the highest grade seed is cheaper in actual cost per acre.

16. Q. HOW IS LUCERNE SEED SOWN?

A. Lucerne seed may be sown both broadcast and in rows. Broadcast sowing enables the plants to cover the ground evenly, and gives the weeds a lesser opportunity of obtaining a foothold and for many reasons is preferable to drilling, but, of course, more seed is required per acre than when sown in rows. The most economical method of broadcasting Lucerne is the Cahoon Hand Seed Sower, which will broadcast evenly any desired quantity of seed at the rate of from 4 to 6 acres per hour.

On the other hand, broadcast sowing precludes the possibility of cultivation, and is only feasible where irrigation is available, or in districts with a good Summer rainfall. Seed, except in very dry districts and without irrigation, is now more uniformly sown in rows about 7 inches apart, using a seed drill, and by this method less seed is necessary per acre, and cultivation may be more easily practised.

Deep seeding is not conducive to good results, and care must be taken when drilling Lucerne seed to see that it is not planted too deeply, as even if only covered very lightly, it must lie in a furrow, and beating rain may wash the ground over it, burying it to too great a depth. It is, therefore, always necessary to be careful to sow shallow when drilling. After seeding has been completed, whether broadcasting or drilling, it is necessary to roll to compact the soil around the seed, and THIS ROLLING AFTER SEEDING IS ESSENTIAL TO SECURING A GOOD STAND.

17. Q. WHAT IS THE TREATMENT AFTER SOWING?

A. After the seed is sown, the weeds must be kept in check, and while a light harrowing might be of advantage, it is always risky at this stage, and must not be attempted until the Lucerne roots have obtained a fairly firm hold. The best method of checking early weeds, which compete with the Lucerne, is to mow frequently, putting the mower over the crop before any of the weeds

have commenced to seed, and, if necessary, repeating the operation about a month afterwards.

Make the first cut before the Lucerne has reached the flowering stage, as in addition to keeping down the weeds, early cutting helps to establish the roots, and to make the plants stool out. The first cutting makes excellent hay, or can be used for green feed, as required. Do not mow too close to the ground at any time, but always leave a few leaves. After the second cutting has been taken, particularly on ground which sets hard, the harrow can be used. It is not advisable to pasture Lucerne during these early stages of growth.

18. Q. WHAT CARE IS NECESSARY WITH THE ESTABLISHED CROP?

A. When thoroughly established Lucerne thrives on very frequent cultivation, and from the time the plants are two years old and onwards, cultivation can be carried out very freely, using a disk harrow with the disks set rather straight and the harrows weighed to cause them to sink to the right depth. This cultivation is valuable in conserving moisture, as the loosening of the surface allows the water or rain to percolate to a greater depth, and prevents waste by running over the surface, as well as minimising loss through possible evaporation.

Cultivation also thickens the crop, as the splitting of the crowns by the disk harrow encourages stooling, and no fear need be entertained that the operation at this stage will injure the plants, as they are too strongly rooted to be harmed by surface cultivation. Where a disk harrow is not available, an ordinary spring tooth cultivator can be used just as effectively, and for moist ground one fitted with special narrow tines is most satisfactory.

In districts where irrigation facilities are available, it is a good practice, after feeding down the Lucerne and giving it an irrigation, to broadcast a bushel of Algerian Oats per acre in the crop. A deep scarifying will suffice to cover the Oats, which will grow up with the Lucerne, thus providing an abundance of useful fodder during the Winter, when the latter is dormant, while if stock are removed from the field in September, and the crop permitted to mature, the Oats can be cut for hay and make a valuable reserve of fodder for any kind of stock. The best time for sowing the Oats is in the early Autumn. After cutting the oat hay, irrigate the ground and scarify again. The cultivation and the Oats help the Lucerne, while the Oats grow more freely, owing to the fertilising qualities of the latter.

19. Q. WHEN SHOULD LUCERNE BE CUT FOR HAY?

A. The time to cut Lucerne for hay is just when it is coming into bloom, that is to say, not more than 10 per cent. of the crop should be in flower, and as at this stage the second growth is commencing to show, it is obviously unwise to destroy the basis of the succeeding crop. Experienced growers prefer to judge the time to mow their Lucerne by the height of the second growth, which should not be more than an inch or two.

The first cutting of the season should take place before flowering has commenced. In warm, dry climates, cut, rake and put the Lucerne into stooks all in the same day, allowing it to remain in the stook for one day only (unless wet weather sets in) before proceeding with the stacking. Drying is a very rapid process in warm, dry climates, and delay will inevitably result in loss of the succulent leaves, and as the valuable part of Lucerne is its leaf, care must be taken in all haymaking operations to conserve the foliage. In moister climates, curing will, of course, take longer, and allowance must be made accordingly. Stack the Lucerne under cover, as the quality of the hay is thereby improved.

20. Q. WHAT IS DODDER?

A. This noxious scourge is the greatest enemy of Lucerne, and although the use of Brunning's Specially Clean Dodder-Free Seed will to a great extent keep it out of Lucerne paddocks, there is always the danger, especially on land which has previously been seeded to Lucerne and affected with Dodder, that it may have been allowed to seed.

Seed of Dodder retains its germinating powers for several years, and has been known to lie dormant in the ground for a very lengthy period, so that it appears in the crop although not actually present in the seed sown. This is a very important point, and again emphasises the necessity for using only properly cleaned, reliable seed. The Dodder in the earlier stages of growth appears similar to a thread-like vine, and the young plants attach themselves to the Lucerne seedlings. As soon as this thread-like vine is firmly attached to the Lucerne plant, the stem connecting it with the ground withers away and the Dodder draws its sustenance from the Lucerne by means of tiny suckers which enter the tissues of the host plant. Dodder grows very rapidly, forming tangled masses with its yellow stems, and soon chokes out the Lucerne. The flowers are of a bright golden yellow. As soon as there is any suspicion of Dodder appearing in a Lucerne or Clover field, send us samples of the plants and we will be glad to identify and recommend remedies for its eradication. On no account allow the Dodder to seed, as this only prolongs and spreads the trouble.

21. Q. WHAT ELSE DO I REQUIRE TO KNOW ABOUT LUCERNE?

A. This leaflet deals with the main points in growing Lucerne successfully, but queries may arise from time not included herein. To deal thoroughly with Lucerne would take a fairly large book and those readers who desire further information on this "King of Fodders," are requested to write to F. H. BRUNNING PTY. LTD., Box 857, Melbourne, when the necessary particulars will be gladly given free on application. When making enquiries about Lucerne or other subjects, it very much facilitates prompt reply if each question is numbered and shown clearly from the general body matter of the letter.

QUANTITIES OF AGRICULTURAL SEED USUALLY SOWN PER ACRE.

The quantities shown are those generally used, and are only given as a guidance. These quantities vary considerably in some cases according to the conditions and method of sowing, as well as when used in mixtures. See Brunning's Farm Book, "Fodder Crops for Australia," Price 2/8, post free.

Name of Seed.	Quantity per acre when sown alone	Name of Seed.	Quantity per acre when sown alone
Alsike Clover	B 12 lbs.	Lolium Subulatum	B 15 to 20 lbs.
Ambercane	B 12 lbs.	Lotus Major	B 3 to 4 lbs.
Ambercane	D 8 to 10 lbs.	Lucerne	B 15 to 20 lbs.
Barley (all varieties)	B 100 lbs.	Lucerne	D 7 to 10 lbs.
Beans, Tick or Horse	B 120 lbs.	Maize	B 112 lbs.
Beans, Soy	B 120 lbs.	Maize (for green fodder)	D 28 to 42 lbs.
Beet, Sugar	D 8 lbs.	Maize (for grain)	D 12 to 14 lbs.
Beet, Silver	D 4 to 5 lbs.	Mangel	D 4 lbs.
Erseem, Clover	B 15 to 20 lbs.	Meadow Foxtail	B 12 to 15 lbs.
Berseem, Clover	D 10 lbs.	Mustard (with Rape)	1/2 lb.
Birdsfoot, Trefoil	B 3 to 4 lbs.	Oats	80 lbs.
Bokhara Clover	B 10 lbs.	Paspalum	B 6 to 8 lbs.
Bokhara Clover	D 4 to 5 lbs.	Peanuts	D 28 to 30 lbs.
Boyd's Clover	B 4 to 5 lbs.	Peas, Field	120 lbs.
Broom, Corn	B 12 lbs.	Phalaris Bulbosa	D 2 to 3 lbs.
Broom, Corn	D 8 to 10 lbs.	Planter's Friend	See Imphee
Buckwheat	B 50 lbs.	Prairie Grass	B 40 lbs.
Burr Clover	B 10 to 12 lbs.	Pumpkin (Hills')	2 lbs.
Cabbage, Field	D 2 lbs.	Rape	B 4 lbs.
Carrot, Field	D 4 lbs.	Rhodes Grass	B 8 to 10 lbs.
Chicory	D 4 lbs.	Rye Corn	B 120 lbs.
Chou Moellier	D 2 lbs.	Rye Grass (Perennial)	B 40 lbs.
Cocksfoot	B 40 lbs.	Sheep's Burnet	B 30 lbs.
Cow Grass	B 20 lbs.	Sorghums	B 12 lbs.
Cow Peas	B 90 to 120 lbs.	Sorghums	D 8 to 10 lbs.
Cow Peas	D 15 to 20 lbs.	Strawberry Clover (shelled)	B 2 lbs.
Crimson Clover	B 12 to 15 lbs.	Subterranean Clover	B 2 to 3 lbs.
Crested Dogtail	B 20 lbs.	Sudan Grass	B 15 to 20 lbs.
Hubam, Clover	B 10 to 12 lbs.	Sudan Grass	D 8 to 10 lbs.
Hubam, Clover	D 3 lbs.	Sugar Mangel	D 6 lbs.
Imphee	B 12 lbs.	Sunflower	D 8 to 10 lbs.
Imphee	D 8 to 10 lbs.	Swede	D 2 to 3 lbs.
Italian Rye Grass	B 40 lbs.	Sweet Clover	B 10 lbs.
Japanese Millet	B 15 lbs.	Sweet Clover	D 4 to 5 lbs.
Japanese Millet	D 8 to 10 lbs.	Tares	B 120 lbs.
Johnson Grass	B 12 lbs.	Timothy	B 30 lbs.
Johnson Grass	D 8 to 10 lbs.	Trefoil (Black Medic)	B 20 lbs.
Kale	D 2 to 3 lbs.	Turnip, Field	D 2 to 3 lbs.
Kentucky Blue Grass	F 30 lbs.	Wallaby Grass	B 15 to 20 lbs.
King Island Melilot	B 15 to 20 lbs.	Westernwath Rye Grass	B 40 lbs.
King Island Melilot	D 10 lbs.	White Dutch Clover	B 12 to 14 lbs.
Linseed	84 lbs.	Yorkshire Fog Grass	B 20 lbs.

"B" represents sowing Broadcast. "D" is the quantity when sowing in Drills.

(The quantities in all cases are shown in pounds to avoid confusion with the varying weights per bushel of the different seeds and grains.)

Samples and Quotations Free on Application.

BRUNNINGS

(F. H. BRUNNING PTY. LTD.)

"THE LARGEST AND LEADING SEED SUPPLIERS IN VICTORIA"
64 ELIZABETH STREET, MELBOURNE

